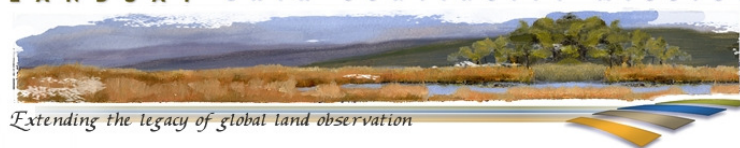




The **GLOBE** Program



LANDSAT DATA CONTINUITY MISSION



SEASONS AND BIOMES

**Dr. Elena Sparrow, International Arctic Research Center,
University of Alaska Fairbanks (UAF)**

Dr. Jessica Robin, SSAI/NASA Goddard Space Flight Center

Dr. Leslie Gordon, Gordon Consulting

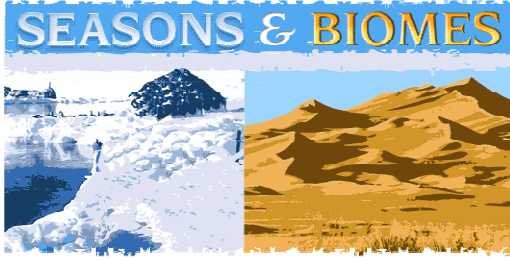
Ms. Kim Morris, Dr. Dave Verbyla, University of Alaska Fairbanks

Ms Stephanie Stockman, SSAI/NASA Goddard Space Flight Center

Dr. Elissa Levine, NASA Goddard Space Flight Center

Dr. Sheila Yule, GLOBE Program Office

Martha R. Kopplin, Dr. Martin Jeffries, UAF



Outline

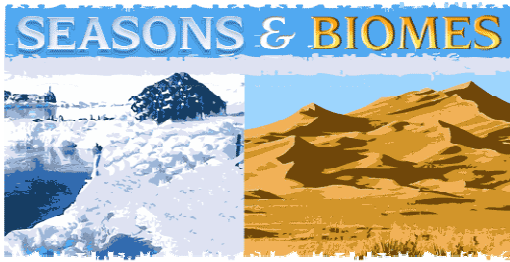
- ***International Polar Year (IPY)***
- ***Ice Phenology Protocol***
- ***Professional Development Workshops***
- ***Partners and their Activities***
- ***GLOBE Alumni***
- ***Presentations & Papers***



International Polar Year



Photos courtesy of IPY 2007-2008: <http://www.ipy.org>



IPY Activities (March 2007)

- Seasons & Biomes had web chats, web forums and a Pole-to-Pole videoconference to kick-off IPY
- 100 GLOBE students from Argentina and Alaska participated in the Pole-to-Pole videoconference
- 300 GLOBE students from all over the world participated in IPY web chats & web forums
- 19 scientists from Arctic, Antarctic, NASA, and UCAR participated in IPY web chats, web forums, and videoconference



Photo courtesy of UA IPY

Argentine (below) and Alaskan students (above) participating in the Pole-to-Pole videoconference

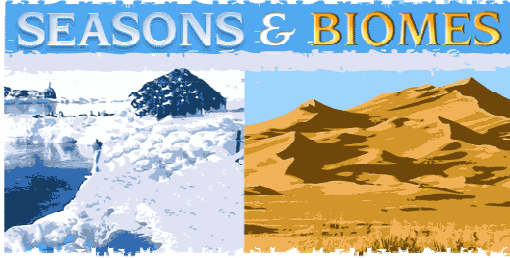


Photo courtesy of GLOBE

Ice Phenology Protocol



Photo courtesy Martin Jeffries



Ice Phenology Protocol

- **Freeze-up, break-up, and ice duration are largely determined by weather; consequently, freshwater ice phenology is a sensitive indicator of climate variation and change**
- **GLOBE schools in high latitudes observe annual freezing and melting of ice on fresh waters near their schools**
- **Protocol and learning activities developed and being piloted in 2007**
- **Dissemination to GLOBE community planned for 2008**

***Freeze-Up
Chena River, Alaska
November 2006***



Photos courtesy of Martin Jeffries

Break-up Sequence Alaska (April-May, 2005)



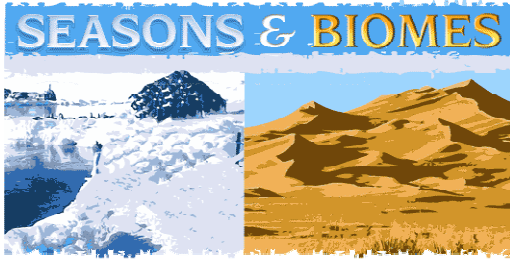
Photos courtesy of Martin Jeffries

Professional Development Workshops



Photos courtesy of Mary Ellsworth





Professional Development Workshops

- GLOBE Phenology Workshop, Freiburg, Germany (February 2007)
- Seasons and Biome Workshop, International Arctic Research Center, University of Alaska Fairbanks in Fairbanks, Alaska (March 2007)
- Seasons and Biomes Workshop in George, South Africa (April 2007)
- IPY GLOBE Seasons and Biomes Workshop, Federovskoe, Russia (July 2007)

Seasons and Biomes Workshop Fairbanks, Alaska (March 2007)



Photos courtesy of Mary Ellsworth, Greg Lopatka & Elena S.

Ice Phenology Protocol at Chena River Fairbanks, Alaska (March 2007)



Photos courtesy of Mary Ellsworth & Greg Lopatka

Vegetation Phenology Learning Activity



Photos courtesy of Mary Ellsworth & Greg Lopatka

Other Workshop Activities



Photos courtesy of Mary Ellsworth & Greg Lopatka

Seasons and Biomes Workshop in S. Africa



Setting up a study site



Observations



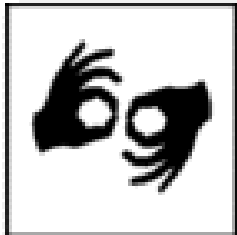
Land Cover protocols



IPY Seasons and Biomes Workshop in Russia



Partners and their Activities



Increasing Accessibility of GLOBE Protocols Project



Gallaudet University &
Laurent Clerc National Deaf Education Center

Integrated Global Science Teacher Training Workshop

Gallaudet University, Washington DC, USA

June 2007





GLOBE Alumni



Photos courtesy of Mary Ellsworth, Greg Lopatka & GLOBE

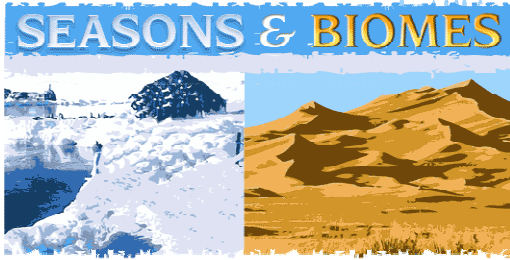


GLOBE Alumni

Photos courtesy of Mary Ellsworth & Greg Lopatka



- Each alumni participated in the March 2007 Seasons and Biome Workshop in Fairbanks, Alaska
- Each alumni made a presentation about the biomes from their region
- Each alumni was trained in the ice and vegetation phenology protocols
- Each alumni prepared their own IPY presentation
- Each alumni will serve as IPY ambassadors to their world regions educating the public about the importance of polar regions & IPY activities




Selected Presentations & Publications

- Sparrow, E.B., Robin, J.H., Gordon, L. S., Jeffries, M.O., Levine, E., and Verbyla, "Monitoring Seasons Through Global Learning Communities", Eos Trans. AGU, Fall Meet. Suppl., Abstract ED23B-1247, p. 1247, vol. 87, (2006). Published
- Robin, J., Dubayah, R., Sparrow, E. and Levine, E., "Monitoring start of season in Alaska", Eos Trans. AGU, 87(53), Fall Meet. Suppl., Abstract B31A-1064, p. B31A-1064, vol. 87(53), (2006). Published
- Sparrow, E.B., Robin, J.H., and Boger, R.H., "GLOBE seasons and biomes: an international IPY Earth science project", Geophysical Research Abstracts, European Geosciences Union, p. SRef-ID 1, vol. 9, 0582, (2007). Published

Join us on Seasons and Biome

<http://globe.gov/seasons>



Seasons and Biomes

A biome is a large geographic area of distinctive plant and animal groups that are adapted specifically for a particular environment. Biome type is determined by the climate and geography of a region. Through the GLOBE Seasons and Biomes project, students and teachers will have the opportunity to use GLOBE resources and support to conduct scientific inquiries in their local environments and biomes.

This project will contribute critically needed science measurements to validate satellite data used in research on regional climate change, prevention and management of diseases, and understanding of the water and carbon cycles. By monitoring the seasons in your biome, you will learn how interactions within the Earth system affect your local environment and how it in turn affects regional and global environments.

Find out more about the Seasons and Biomes Project:

- [Project summary](#) (PDF)
- [Frequently Asked Questions](#)
- [Descriptions of Land Biomes](#)
- [International Polar Year \(IPY\)](#)

Activities

8 Nov 2006 - 15 Feb 2007: [Seasons and Biomes Questionnaire](#)

March 2007: Pole to Pole video conference and follow-up web chats

As additional Seasons and Biomes activities are planned, information about them will be added to this page.